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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/604,410

07/18/2003

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EXAMINER

LEUNG, WAI LUN

ART UNIT

PAPER NUMBER

2613

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/604,410	DOYLE ET AL.	
	Examiner	Art Unit	
	Danny Wai Lun Leung	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2007.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-43 is/are rejected:
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>20030718, 20030728</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Levi et al.** (*US005148504A*), in view of **Maczawa et al.** (*US006145024A*).

Regarding claim 34, **Levi** discloses an optical communication method, comprising:

sending an address of a second core (*103, fig 10*) and control signals (*col 4, ln 32-48 describes processing instructions, path choice, path direction, are encoded in the header, therefore, the path choice and path direction being encoded in the header can be interpreted as "address"*) from a first core (*102, fig 10*) to a first optic controller (*optical switch logic element 111, fig 10; col 13, ln 29-31*) in an integrated circuit (*100, fig 10*), said integrated circuit comprising:

the first core (*102, fig 10*),

the first optic controller (*optical switch logic element 111, fig 10; also shown as control 93, fig 9*) connected to the first core,

a plurality of optical transmitters under control of the first optic controller (*resonators 90, fig 9 emit optical signal and are controlled by 93; also shown as electrical-to-optical conversion elements 109, fig 10; col 12, ln 65-col 13, ln 6*),

the second core (*103, fig 10*),

a second optic controller (*optical switch logic element 112, fig 10; also shown as control 93, fig 9*) connected to the second core,

a plurality of optical receivers (*Optical-to-electrical conversion elements 110, fig 10; col 13, ln 26-29*) under control of the second optic controller (*col 13, ln 29-31*), and

a plurality of optical channels (*106, fig 10*), wherein each optical channel extends from one of the optical transmitters to one of the optical receivers (*as shown in fig 10*); selecting a first optical channel of the plurality of optical channels for subsequently transmitting an optical signal over the first optical channel (*col 13, ln 24-31*), wherein the first optical channel extends from a first optical transmitter of the plurality of optical transmitters and a first optical receiver of the plurality of optical receivers (*fig 10*), and wherein said selecting is performed by the first optic controller (*col 13, ln 24-26*); after said selecting, transmitting data from the first optic controller to the first optical transmitter (*col 13, ln 2-6*);

encoding into optical data, by the first optical transmitter, the transmitted data (*col 13, ln 26-29*); and

transmitting the optical data from the first optical transmitter (*109, fig 10*) to the first optical receiver (*110, fig 10*) via the first optical channel (*106, fig 10*).

Levi does not disclose expressly wherein decoding, by the first optic controller, the address; and perform the selecting after said decoding. **Maezawa**, from the same field of endeavor, teaches a method of optical transmission comprising: decoding, by an optic controller, the address (*col 14, ln 36-43*); and after said decoding, selecting a first optical channel of the plurality of optical channels for subsequently transmitting an optical signal over the first optical

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channel (*col 14, ln 43-50*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to use **Levi's** optic controller to decode the address of the second core before selecting a first optical channel of the plurality of optical channels as taught by **Maezawa**. The motivation for doing so would have been to perform faster path selection by decoding the address using the controller.

Claim 36 is rejected for the same reasons as stated above regarding claim 34, because in addition to the limitations in claim 34, **Maezawa** further teaches wherein said selecting takes into account one or more defective optical channel of the plurality of optical channels (*col 18, ln 31-49*). It would have been obvious to combine **Levi** and **Maezawa** for the same reason as stated regarding claim 34. The motivation for doing so would have been to perform faster path selection by reducing transmission over erroneous channel.

3. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Levi et al.** (*US005148504A*), in view of **Maezawa et al.** (*US006145024A*) as discussed above regarding claim 34, and further in view of examiner's **Official Notice**.

Regarding claim 35, **the combination of Levi and Maezawa** discloses the method in accordance to claim 34 as discussed above. It does not disclose expressly wherein said selecting takes into account a channel length of each optical channel of the plurality of optical channels. However, Examiner takes **Official Notice** that it is common and well known to select optical channel for transmission by taking into account a channel length of each optical channel of a plurality of optical channels. Therefore, it would have been obvious or a person of ordinary skill in the art at the time of invention to take into account a channel length of each optical channel of the plurality of optical channels onto the selecting step in **the combination of Levi and**

Maezawa's system as it is **common and well known**. The motivation for doing so would have been to enhance transmission speed by taking into account channel length when selecting transmission channel.

US Patent Number 5,430,561 to Kato et al. is cited herein as evidence to support examiner's taking of Official Notice, since Kato teaches a selecting procedure takes into account a channel length of each optical channel of the plurality of optical channels (*col 15, ln 5-19*).

4. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Levi et al.** (*US005148504A*), in view of **Maezawa et al.** (*US006145024A*), as applied to claim 34 above, and further in view of **Chappel et al.** (*US006081527A*)

Regarding claim 43, **the combination of Levi and Maezawa** discloses the method in accordance to claim 34 as discussed above. It does not disclose expressly wherein the method further comprises after said transmitting the optical data: handshaking between the first optical transmitter and first optical receiver to communicate between the first optical transmitter and first optical receiver such that said transmitting the optical data was successful.

Chappel, from the same field of endeavor, teaches a method comprises after transmitting the optical data: handshaking between the first optical transmitter and first optical receiver to communicate between the first optical transmitter and first optical receiver such that said transmitting the optical data was successful (*col 5, ln 48-67*), wherein the handshaking comprises exchanging messages between the optical transmitter and first optical receiver over an optical channel of the plurality of optical channels (*col 6, ln 1-11*).

Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to use the second optical channel of the plurality of optical channel in the combination of **Levi and Maczawa's** system for handshaking between the first optical transmitter and first optical receiver to communicate between the first optical transmitter and first optical receiver such that said transmitting the optical data was successful after transmitting the optical data, as taught by **Chappel**, wherein the handshaking comprises exchanging messages between the optical transmitter and first optical receiver over the second optical channel of the plurality of optical channels. The motivation for doing so would have been to ensure that no data are lost by performing handshaking between the optical transmitter and the first optical receiver.

5. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Levi et al.** (*US005148504A*), in view of **Maczawa et al.** (*US006145024A*), as applied to claim 34 above, and further in view of **Habbab et al.** (*US4797879*)

Regarding to claim 37, the combination of **Levi and Maczawa** discloses the method as discussed above regarding claim 34. It does not disclose expressly that responsive to said detecting, re-transmitting the optical data from the first optical transmitter to the first optical receiver via a second optical channel of the plurality of optical channels.

Habbab, from the same field of endeavor, teaches a method of detecting a collision with optical data during transmitting the optical data, and responsive to said detecting, re-transmitting the optical data from the first optical transmitter to the first optical receiver via a second optical channel of the plurality of optical channels (*col 4, ln 7-34*).

Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to re-transmitting the optical data from the first optical transmitter to the first optical receiver via a second optical channel of the plurality of optical channels, as taught by **Habbab** in the combination of **Levi and Maczawa's** method. The motivation for doing so would have been to resolve the collision problem in the combination of **Levi and Maczawa's** method by re-transmitting the optical data from the first optical transmitter to the first optical receiver via a second optical channel of the plurality of optical channels such that the transmission system is faster and more efficient.

6. Claims 38-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Levi et al.** (*US005148504A*); in view of **Maczawa et al.** (*US006145024A*), as applied to claim 34 above, and further in view of **Wu et al.** (*US005946116A*).

Regarding to claim 38, **the combination of Levi and Maczawa** discloses the method in accordance to claim 34 as discussed above. **It** does not disclose expressly wherein the first optical channel comprises a first optic channel oriented in a first direction, a second optic channel segment oriented in a second direction that is perpendicular to the first direction, and a redirection termination disposed between the first and second optic channels for causing the optical data propagating in the first optic channel in the first direction to be diverted into the second optic channel to propagate in the second optic channel in the second direction.

Wu, from the same field of endeavor, teaches an optical transmission method wherein a first optical channel (*input 500, fig 10*) comprises a first optic channel oriented in a first direction (*polarization Rotator array 700, fig 10, oriented vertically*), a second optic channel segment

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oriented in a second direction that is perpendicular to the first direction (*704, fig 10, oriented horizontally*), and a redirection termination disposed between the first and second optic channels (*PBS 800, fig 10*) for causing the optical data propagating in the first optic channel in the first direction to be diverted into the second optic channel to propagate in the second optic channel in the second direction (*as described in col 8, ln 56 – col 9, ln 26; this is similar to applicant's fig 10 and fig 2A as disclosed in the specification*).

Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to apply **Wu's** teaching wherein the first optical channel comprises a first optic channel oriented in a first direction, a second optic channel segment oriented in a second direction that is perpendicular to the first direction, and a redirection termination disposed between the first and second optic channels for causing the optical data propagating in the first optic channel in the first direction to be diverted into the second optic channel to propagate in the second optic channel in the second direction, to route the combination of **Levi and Maezawa's** optical signal from one channel to another. The motivation for doing so would have been to route optical signal from one channel to another while having low inter-channel crosstalk and low insertion loss (*Wu, col 10, ln 41-47*) by having a first optical channel comprises a first optic channel oriented in a first direction, a second optic channel segment oriented in a second direction that is perpendicular to the first direction, and a redirection termination disposed between the first and second optic channels for causing the optical data propagating in the first optic channel in the first direction to be diverted into the second optic channel to propagate in the second optic channel in the second direction.

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As to claim 39, **Wu** further discloses wherein the redirection termination is slant-shaped *(as shown in fig 10)*;

As to claims 40-42, **the combination of Levi, Maczawa**, discloses the method in accordance to claim 39 as discussed above, wherein the redirection termination is in the form of a particular shape for redirecting optical signal towards a particular target *(as shown in Wu's fig 10)*. Absent any teaching of criticality, it would have been an obvious engineering design choice or an obvious aesthetic design change to make the redirection termination as described above as slant-shaped, curved, hemispherical-shaped, or cone-shaped, such that the optical signal can reach the targeted destination.

Furthermore, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Swain et al., 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; Minnesota Mining and Mfg. Co. v. Coe, 69 App. D.C. 217, 99 F.2d 986, 38 USPQ 213; Allen et al. v. Coe, 77 App. D.C. 324, 135 F.2d 11, 57 USPQ 136.

In re Seid, 161 F.2d 229, 73 USPQ 431 (CCPA 1947) *(The court found that matters relating to ornamentation only which have no mechanical function cannot be relied upon to patentably distinguish the claimed invention from the prior art.)*

Also In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) *(The court held that the configuration of the claimed disposable plastic nursing container was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant.)*

Response to Arguments

7. Applicant's arguments filed 2/1/2007 have been fully considered but they are not persuasive.
8. In response to applicant's argument that the examiner's analysis is incompatible with the directionality of optical data flow in Levi, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Although Fig 10 of Levi does not expressly illustrate the direction of data flow, while descriptions in col 13, ln 11-31 only describe a particular example of a data flow that does not appear to be directionally anticipate applicant's claimed invention. However, Fig 4 of Levi explicitly illustrate that Levi's invention is physically capable of bi-directional optical signal traffic flow. Therefore, it would have been obvious to a person of ordinary skill in the art to recognize that Fig 10 of Levi is also capable of bi-directional optical data flow, and is definitely capable of "transmitting the optical data from the first optical transmitter to the first optical receiver via the first optical channel".

9. Applicant further argues that Levi does not disclose sending an address of a second core and control signal from first core to a first optic controller. However, col 4, ln 32-48 of Levi *describes processing instructions, path choice, path direction, are encoded in the header;* therefore, the path choice and path direction being encoded in the header can be interpreted as "address" since it determines where the optical data goes.

Applicant is reminded that during patent examination, the claims are given the broadest reasonable interpretation consistent with the specification. All subject matter that is the equivalent of the subject matter as defined in the claim, even though specifically different from the definition in the claim, must be considered unless expressly excluded by the claimed subject matter, as stated in **MPEP §904.01**. Also see *In re Morris*, 127 F.3d 1048, 44 USPQ2d 1023 (Fed. Cir. 1997). See **MPEP §2111-§2116.01, §2181-§2184**.

10. Applicant further argues that Levi does not teach or suggest the feature “selecting a first optical channel of the plurality of optical channels for subsequently transmitting an optical signal over the first optical channel, wherein the first optical channel extends from a first optical transmitter of the plurality of optical transmitters and a first optical receiver of the plurality of optical receivers, and wherein said selecting is performed by the first optic controller”.

Applicant argues that the first optic controller (*optical switch logic element 111, fig 10; also shown as control 93, fig 9*) does not appear to perform selecting a channel 106 of the plurality of channels, since Levi teaches that one of the function of element 111 is to control fan-out of a signal in channel 106 into elements 109. However, Levi also teaches that the control element may perform coupling-decoupling function into either one or both of the outgoing light guides (*col 12, ln 65-col 13, ln 6*).

11. Applicant further argues that Levi’s invention only teaches decoding optical data into electrical signals, but not encoding electrical signals into optical data. However, it is obvious that if an IC has an optical-to-electrical conversion element, it would also have an electrical-to-optical conversion element. Furthermore, Levi teaches that introduction of emitted optical signal

may be induced by electrical means (*co 13, ln 1-6*). Therefore, it would have been obvious that an electrical-to-optical conversion element may be implemented.

12. Applicant further argues that Maezawa does not teach decoding an address. However, in col 14, ln 36-50, Maezawa teaches “link connection control circuit detects connection information corresponding to each channel path”, which is being interpreted as decoding an address, since an address is simply information corresponding to a path or destination.

13. Applicant further argues that “all paths 106 in Levi, fig 10 are between cores 102 and 103. Therefore, decoding the address of the second core 103 does not in any way assist in distinguishing the different paths”. Applicant’s attention is directed to path 104 in fig 10, which could lead to other “high performance electronic Ics such as 102 and 103. Also, as explicitly illustrated in fig 4-5 of Levi’s invention, path selection is performed by a control element 40 in fig 4 and 54 in fig 5. Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to use **Levi’s** optic controller (*control element such as 40 in fig 4 or 54 in fig 5*) to decode the address of the second core before selecting a first optical channel of the plurality of optical channels as taught by **Maezawa**. The motivation for doing so would have been to perform faster path selection by decoding the address using the controller.

14. Applicant stated that Examiner has not provided an argument evidence by teaching in the prior that it is obvious to modify Levi by having the selecting take into account one or more defective optical channel of the plurality of optical channel. However, it is respectfully submit that **Maezawa’s** teaching of “wherein said selecting takes into account one or more defective optical channel of the plurality of optical channels (*col 18, ln 31-49*)” is a further teaching of **the combination of Levi and Maezawa**, it would have been obvious for a person of ordinary skill in

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to art to combine Levi and Maezawa for the same reason as stated in claim 34. The motivation for doing so would have been to perform faster path selection by reducing transmission over erroneous channel.

15. Applicant's arguments with respect to claim 35 have been fully considered but they are not persuasive.

Claim 35 is rejected as being unpatentable under 35 USC 103 over **Levi et al.**

(*US005148504A*), in view of **Maezawa et al.** (*US006145024A*) as presented in the last Office action paper number 20061026, mailed 11/3/2006. Applicant's arguments filed 2/1/2007 have been fully considered but they are not persuasive. The Official Notice, presented in the last Office action, paper number 20061026, concerning selecting takes into account a channel length of each optical channel of the plurality of optical channels is maintained. US Patent Number 5,430,561 to Kato et al. is cited herein as evidence to support examiner's taking of Official Notice, sine Kato teaches a selecting procedure takes into account a channel length of each optical channel of the plurality of optical channels (*col 15, ln 5-19*).

16. In response to applicant's argument that there is no disclosure in Levi that there is a significantly large variation in the lengths of the existing channels 106 to justify the complexity and expense of taking the channel lengths into account in the process of selecting a channel, and that the channels 106 in Levi, fig 10, appear to have lengths that do not vary significantly from each other. It is respectfully submit that the variation in the lengths of the channels as shown in Levi's fig 10 is analogous to applicant's fig 4. Since applicant's original disclosure does not expressly justify the complexity and expense of taking the channel lengths into account in the

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process of selecting a channel, it must be obvious for a person of ordinary skill in the art that such expenses and complexity does not outweigh the benefits.

Regarding claims 40-42, applicant disagree that “it was known to a person of ordinary skill in the art that the features of the redirection termination being curved, hemispherical-shaped, and con-shaped are result effective variables with respect to the alleged optimization”. However, such shapes being result effective variables are basic physics knowledge that is so common and well known to a person of ordinary skill in the art that it is being taught in a high school text book (*Cliffs Quick Review Physics, 1994, Cliffs Notes, Inc. pages 136-147*). Therefore, it would have been an obvious engineering design choice or an obvious aesthetic design change to make the redirection termination as any curvatures and shapes, such as slant-shaped, curved, hemispherical-shaped, or cone-shaped, such that the optical signal can reach the targeted destination.

Furthermore, if applicant still disagree the shapes and features as being result effective variables, such features must then be aesthetic design changes that are common and well known. *In re Seid , 161 F.2d 229, 73 USPQ 431 (CCPA 1947) (The court found that matters relating to ornamentation only which have no mechanical function cannot be relied upon to patentably distinguish the claimed invention from the prior art.)*

Also In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (The court held that the configuration of the claimed disposable plastic nursing container was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant.).

Conclusion

17. The prior art made of record in previous actions and not relied upon is considered pertinent to applicant's disclosure.

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Danny Wai Lun Leung whose telephone number is (571) 272-5504. The examiner can normally be reached on 9:30am-9:00pm Mon-Thur.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DWL
April 9, 2007


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